

Water Quality Effect on Yield and Yield Components of Four Genotypes of Safflower

A. Nasser¹*, T. Masoudi, M. B. Khorshidi, and A. Abdi Ghazi Jahani

Agricultural Engineering Research Department, East Azarbaijan Agricultural and Natural Resources Research and Education Center, AREEO, Tabriz, Iran.

nasser_{ab}@yahoo.com

Former MSc Student, Islamic Azad University, Miyaneh Branch.

tahere.masoudi@yahoo.com

Seed and Plant Improvement Research Department, East Azarbaijan Agricultural and Natural Resources Research and Education Center, AREEO, Tabriz, Iran.

mb.khorshidi@yahoo.com

Research Division of Natural Resources, East Azarbaijan Agricultural and Natural Resources Research and Education Center, AREEO, Tabriz, Iran.

akbar_abdi1343@yahoo.com

Abstract

The present study was conducted with the aim of investigating the effect of water quality on safflower yield and yield components. The experiment had two factors including water salinity at two levels (S1= 1.8 dS m⁻¹ and S2= 5.8 dS m⁻¹) and landrace genotypes of safflower (G1= Dizaj Hossein Beig- Marand, G2= Koshaksara- Marand, and G3= Agkand- Mianeh). The experiment was laid out as a split plot design with three replications. Results showed that the interaction effects of salinity and landrace genotypes on grain yield, 1000- seeds weights, and the main capitol weight were significant ($P<0.05$). Landrace genotypes of safflower were different in the harvest index. This result revealed a genetic diversity among safflower genotypes. Water salinity affected biological yield and seeds per capitol. The traits such as leaves and stem numbers, capitol diameter and capitol per plant were not affected by the experimental treatments. With increasing water salinity from 1.8 to 5.8 dSm⁻¹, the seeds per capitol, biological yield, and grain yield decreased by 45%, 56% and 44%, respectively. The highest and lowest 1000-seeds weights were recorded as 38 and 26 g, respectively. The highest grain yield was obtained by Koshaksara-Marand genotype at salinity of 1.8 dS m⁻¹ (1207 kg ha⁻¹) and 5.8 dS m⁻¹ (568 kg ha⁻¹). The lowest yield of 426 kg ha⁻¹ was from Dizaj Hossein Beig-Marand genotype at salinity of 5.8 dS m⁻¹. Therefore, Koshaksara- Marand genotype produced high yield as compared to other genotypes under water salinity treatments.

Keywords: Saline water, Safflower yield, Water salinity stress, Koshaksara-Marand genotype .

1 - East Azarbaijan Agricultural and Natural Resources Research and Education Center, Tabriz, Iran.

* - Received: August 2016, and Accepted: September 2017